

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously presented) A texture generating apparatus, configured in a CAD (computer aided design) adapted computer graphic system, adapted to provide proximity analysis of objects in a design by generating, manipulating and applying a texture visually indicating the spatial relationship between the modeled objects, the texture generating apparatus comprising:
- a) a processing portion adapted to perform calculations of the proximity analysis;
 - b) a texture coordinates generator portion coupled to said processing portion adapted to provide coordinates relating the texture to be rendered onto the objects in the design; and
 - c) a rendering portion coupled to said texture coordinates generator adapted to provide renderability of the texture onto the objects in the design.
2. (Original) The texture generating apparatus of Claim 1 wherein the processing portion is adapted to operate independently of, but in conjunction with, the CAD adapted computer graphic system.
3. (Original) The texture generating apparatus of Claim 1 wherein objects in a design are comprising a first object and a second object.
4. (Original) The texture generating apparatus of Claim 3 wherein the first object is a component of a design and the second object is a defined plane.
5. (Original) The texture of generating apparatus of Claim 3 wherein the first object is a defined plane and the second object is a component of a design.
6. (Original) The texture generating apparatus of Claim 2 wherein the plane is a defined boundary for the component with respect to the design.

7. (Original) The texture generating apparatus of Claim 1 wherein the texture generator is adapted to access a proximity value characterizing a spatial relationship between objects in a design.

8. (Currently Amended) ~~The texture generating apparatus of Claim 1~~ A texture generating apparatus, configured in a CAD (computer aided design) adapted computer graphic system, adapted to provide proximity analysis of objects in a design by generating, manipulating and applying a texture visually indicating the spatial relationship between the modeled objects, the texture generating apparatus comprising:

- a) a processing portion adapted to perform calculations of the proximity analysis;
- b) a texture coordinates generator portion coupled to said processing portion adapted to provide coordinates relating the texture to be rendered onto the objects in a the design; and
- c) a rendering portion coupled to said texture coordinates generator adapted to provide renderability of the texture onto the objects in a the design, and

wherein the texture generator is adapted to provide a gradation corresponding to the spatial relationship of the component of a design and a defined plane.

9. (Currently Amended) ~~The texture generating apparatus of Claim 1~~ A texture generating apparatus, configured in a CAD (computer aided design) adapted computer graphic system, adapted to provide proximity analysis of objects in a design by generating, manipulating and applying a texture visually indicating the spatial relationship between the modeled objects, the texture generating apparatus comprising:

- a) a processing portion adapted to perform calculations of the proximity analysis;
- b) a texture coordinates generator portion coupled to said processing portion adapted to provide coordinates relating the texture to be rendered onto the objects in a the design; and

c) a rendering portion coupled to said texture coordinates generator adapted to provide renderability of the texture onto the objects in a the design, and

wherein the rendering portion is adapted to render the texture onto the first object such that the gradation indicates the spatial relationship of the first object and the second object.

10. (Currently Amended) ~~The texture generating apparatus of Claim 1~~ A texture generating apparatus, configured in a CAD (computer aided design) adapted computer graphic system, adapted to provide proximity analysis of objects in a design by generating, manipulating and applying a texture visually indicating the spatial relationship between the modeled objects, the texture generating apparatus comprising:

a) a processing portion adapted to perform calculations of the proximity analysis;

b) a texture coordinates generator portion coupled to said processing portion adapted to provide coordinates relating the texture to be rendered onto the objects in a the design; and

c) a rendering portion coupled to said texture coordinates generator adapted to provide renderability of the texture onto the objects in a the design, and

wherein the texture generator is further adapted to enable a user to reposition the first object such that the texture and the gradation thereof rendered upon the first object is reflective of the altered spatial relationship between the first object and the second object during and following the repositioning.

11. (Currently Amended) ~~The texture generating apparatus of Claim 1~~ A texture generating apparatus, configured in a CAD (computer aided design) adapted computer graphic system, adapted to provide proximity analysis of objects in a design by generating, manipulating and applying a texture visually indicating the spatial relationship between the modeled objects, the texture generating apparatus comprising:

a) a processing portion adapted to perform calculations of the proximity analysis;

b) a texture coordinates generator portion coupled to said processing portion adapted to provide coordinates relating the texture to be rendered onto the objects in a the design; and

c) a rendering portion coupled to said texture coordinates generator adapted to provide renderability of the texture onto the objects in a the design, and

wherein the texture generator is further adapted to generate a renderable texture so as to enable a user to apply the texture having a gradation on a per frame basis upon the objects in a design.

12. (Currently Amended) ~~The texture generating apparatus of Claim 1~~ A texture generating apparatus, configured in a CAD (computer aided design) adapted computer graphic system, adapted to provide proximity analysis of objects in a design by generating, manipulating and applying a texture visually indicating the spatial relationship between the modeled objects, the texture generating apparatus comprising:

a) a processing portion adapted to perform calculations of the proximity analysis;

b) a texture coordinates generator portion coupled to said processing portion adapted to provide coordinates relating the texture to be rendered onto the objects in a the design; and

c) a rendering portion coupled to said texture coordinates generator adapted to provide renderability of the texture onto the objects in a the design, and

wherein the texture generator is further adapted to generate a renderable texture so as to enable a user to dynamically apply an alternative texture having a gradation on a per frame basis during repositioning of the first object relative to the second object.

13. (Previously presented) A CAD (computer aided design) adapted computer graphic system configured to enable a user to perform proximity analysis of objects in a design, wherein the proximity analysis is texture based, the computer graphic system comprising:

a) a display device for providing a visible display of said performed texture based proximity analysis;

b) a data input device coupled to enabling said user to enter data related to the objects in a design;

c) a processor and a memory device operably coupled to said data input device for processing of said data;

d) a data storage unit operably coupled to said data input device and said display device for storing data related to the objects in a design; and

e) a texture generating apparatus operably coupled to said data storage unit for generating said texture of said texture based proximity analysis.

14. (Original) The computer graphic system of Claim 13 wherein said texture of said texture based proximity analysis is user definable.

15. (Original) The computer graphic system of Claim 13 wherein said texture of said texture based proximity analysis is user scaleable.

16. (Original) The computer graphic system of Claim 13 wherein said first object is comprising a component of a design, said component of a design relative to said second object.

17. (Original) The computer graphic system of Claim 13 wherein said second object is comprising a defined plane, said plane comprising any of the six orthogonal planes relative to the first object.

18. (Original) The computer graphic system of Claim 13 wherein the first object is comprising a defined plane, said plane comprising any of the six orthogonal planes defined as a boundary with regard to the second object.

19. (Original) The computer graphic system of Claim 13 wherein said second object is comprising a component of a design, said component of a design is relative to said first object.

20. (Original) In a CAD (computer aided design) system for performing proximity analysis of objects in a design, a method for visually indicating the spatial relationship between modeled objects, comprising the steps of:

- (a) accessing a proximity value characterizing a spatial relationship between a first object and a second object;
- (b) generating a texture having a gradation corresponding to the proximity value, the generating performed by a texture generator coupled to receive the proximity value;
- (c) rendering the texture onto the first object such that the gradation indicates the spatial relationship of the first object and the second object;
- (d) displaying the first object and the second object using a display such that the texture and the gradation rendered onto the first object visually indicates the spatial relationship between the first object and the second object; and
- (e) repositioning the first object such that the texture and the gradation thereof rendered upon the first object is reflective of the altered spatial relationship between the first object and the second object during and following the repositioning.

20/21

21. (Original) The method of Claim 20 wherein the gradation is used to implement visual contours on the first object corresponding to a distance from the second object.

22. (Original) The method of Claim 20 wherein the gradation is used to implement visual colors on the first object corresponding to a distance from the second object.

23. (Original) The method of Claim 20 wherein the first object is a component of a design and the second object is a defined plane.

24. (Original) The method of Claim 20 wherein the first object is a defined plane and the second object is a component of a design.

DOCKET NO.: MSFT-1198

PATENT

Application No.: 09/727,985

Office Action Dated: August 28, 2003

25
cancel 25. (Original) The method of Claim 20 wherein the plane is a defined boundary
for the component with respect to the design.
